ENHANCED SURFACE PLASMON POLARITON PROPAGATION INDUCED BY ACTIVE DIELECTRICS

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We present numerical simulations for the propagation of surface plasmon polaritons (SPPs) in a dielectric-metal-dielectric waveguide using COMSOL multiphysics software. We show that the use of an active dielectric with gain that compensates metal absorption losses enhances substantially plasmon propagation. Furthermore, the introduction of the active material induces, for a specific gain value, a root in the imaginary part of the propagation constant leading to infinite propagation of the surface plasmon. The computational approaches analyzed in this work can be used to define and tune the optimal conditions for surface plasmon polariton amplification and propagation.

References.

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